**Outcomes of Chat and Discussion Board Use in Online Learning: A Research Synthesis** 

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**Abstract** 

Online discussion boards are often used in traditional courses, hybrid courses, and fully online

courses. Online chats and discussions can be particularly useful in fully online courses, as these

communication connections are often students' only means of connecting with each other and

sharing ideas in an open forum. While traditional face-to-face courses, and even some hybrid

courses, have the benefit of an in-class discussion, fully online courses often have the discussion

board or chat functions as a means of class interaction. As professors continue forays into online-

tool use, it is important to examine what the literature says, so far, regarding some of these tools.

This research synthesis, therefore, investigates some of the student outcomes of discussion

board/chat use in online learning.

Keywords: Online Learning, Online Interactivities, Student Success in Online Courses

#### Introduction

For quite some time now, the higher education classroom has been expanding beyond the traditional accommodations of brick and mortar buildings to the wide world of cyberspace. Some courses are accessible around the clock: 24 hours, 7 days a week. Other courses are offered online and in the classroom, and others still are offered in the traditional face-to-face setting, but include some online components. Just as course delivery methods are changing, communication methods for various course types are also changing. Online courses simulate the face-to-face classroom through synchronous online discussions and chats, while some traditional and hybrid courses offer the flexibility of asynchronous chats and discussions. Because online chats and discussion boards are often an integral part of fully online higher education courses, and even traditional and hybrid courses, it is important to learn more about the outcomes when these tools are used in the classroom.

# **Purpose of Teaching Approach**

The purpose of online chats and discussion boards is to provide a way for students to interact and discuss components of the course. Baglione and Nastanski (2007) stated, "Discussion groups allow students to participate actively and interact with students and faculty. As such, they supplement content delivery" (p. 139). Arguably, discussion may not only supplement the content delivered in courses, but it may also augment understanding of the ideas and issues discussed in traditional, hybrid, or fully online courses. According to Dengler (2008), a form of active learning such as discussion boards and chats can help students to practically apply the knowledge (theories, etc.) they are gaining in their courses. The students, through discussion boards and chats, have an opportunity to learn from each other.

### **Example of Approach**

Dengler (2008) also pointed out an example of the use of online discussion/chat as a form of active learning. For example, when students in a traditional geography course engaged in debates, these debates complemented the discussions and activities that took place in the classroom. Dengler also noted that the use of online discussion allowed non-native English speakers to take a more active role in debates. In this instance, online discussion not only becomes a means of active learning, but also becomes a mechanism for inclusiveness. By communicating in an online, text-based format, students have an opportunity to check their vocabulary and sentence structure before posting to the board, a confidence booster for those who are new English speakers or those who are just unsure about word choice or syntax. Because the course schedule had some gaps in meeting times, Dengler stated, the use of online discussion was a way for students to continue with topic discussions, even when they were not in class. It is also important to note that the discussion form used in this course was asynchronous, so students had some flexibility as to when they contributed to the discussion.

# Why It Is Important to Study This Topic

With the continued growth of online learning, there should be an effort to learn more about students' experiences in the online environment. There have been discussions about how students fare in online courses versus face-to-face courses, in addition to discussions about students' satisfaction with one course environment over the other. However, now that discussion needs to move toward getting a better understanding of how students are learning in courses and what online learning mechanisms are doing or not doing to facilitate students' learning and satisfaction in online courses. More knowledge in this area can influence the way professors use online discussion and chat in their courses. Also, online discussions/chats are often used in traditional and hybrid

classes, so recognizing some of the student outcomes associated with discussion boards/chats could benefit teachers of traditional and hybrid courses as well.

# **Statement of Purpose**

The purpose of this research synthesis is to gather current data about the various outcomes for students who use online chat and discussion boards in higher education classrooms, and show the major themes for this topic. The text will focus specifically on completely online and blended/hybrid courses. Following the Introduction, I move on to the Literature Review, the Methods section, Findings, Discussion, and Conclusion.

### **Theoretical Framework**

I used the theory of transactional distance (Moore, 2007) to guide the way I approached the research synthesis. Transactional distance theory looks at the relationship between autonomy, structure, and dialogue in courses and how these elements can affect the numerous degrees of learner autonomy. Students' ability to participate in knowledge construction is particularly important for this study because this co-construction impacts students' outcomes in postsecondary courses. The relative nature of transactional distance theory also works well for this study because some of the courses mentioned have very little transactional distance, while others have a higher degree of transactional distance. The themes from the Findings section are briefly discussed in relationship to transactional distance in the Discussion section of the synthesis.

### **Literature Review**

Online Discussion: Student-Related Elements

Students decided to participate in online discussions for a number of reasons, one of which was social. For example, a study by Chapman, Storberg-Walker, and Stone (2007) showed that if a student who posted to the board received positive responses from other students, that student felt

obligated to respond to those positive posts. This social obligation to post also appeared when students wanted to make others feel included. For example, if one student had not received a response to his post, some students felt it was their duty to include him. The students were allowed to interact in various ways via the discussion board.

Likewise, in an article by Mitchem et al. (2008), students' learning in a case-based course was enhanced through online discussions and chats. They were allowed to collaborate and hone or change ideas based on interaction with others in the course. Pena-Shaff, Altman, and Stephenson (2005) found that increased participation in online discussions (via bulletin boards in this case) correlated with greater student satisfaction in the course.

Online Discussion: Instructor-Related Issues

An, Shin, and Lim (2009) discovered that instructor facilitation can determine how students participate in online discussions. For example, they noted that when instructors required students to respond to each other, and minimized the social presence of the instructor, students responded to each other more frequently. The students relied on the comments and feedback of other students instead of defaulting to the instructor.

As mentioned previously, Baglione and Nastanski (2007) also investigated the importance of the use of online discussion tools; however, they examined this issue from the faculty perspective. While there was no discussion of the cognitive and affective outcomes for students in postsecondary courses, Baglione and Nastanski did mention the importance of learning more about how to use online discussion tools in courses, particularly because the implementation of online learning is becoming so widespread.

De Wever, Van Keer, Schellens, and Valcke (2009) discussed the importance of role assignments in online discussions. The instructional sciences course in this study used asynchronous online discussion as a part of the face-to-face course. De Wever, Van Keer, Schellens, and Valcke indicated, as did Mitchem et al. (2008), that online discussions were used to help students continue discussions that took place in the course. While the focus of this study was more on the impact of roles in asynchronous discussions, it did address some important points about the use of online discussion in a postsecondary course.

These texts represent a modicum of research available on the cognitive and affective outcomes for students in postsecondary courses that use discussion boards and online chats.

# Methodology

First, I conducted a search to find the necessary articles for my research synthesis. I used the Education Resources Information Center (ERIC) database to conduct this first phase of my research. The search terms I used were as follows: discussion board and satisfaction, online chat and satisfaction, online learning and discussion, and online learning and computer mediated communication. My limiters were education level (higher education, postsecondary, two-year colleges), reports (reports-research and reports-evaluative), and dates (1998-2010).

I also created charts of inclusion and exclusion criteria, excluded studies, an article credibility chart, an article comparison matrix, a findings matrix, and a matrix of themes according to the guidelines provided by Major and Savin-Baden (2010). The inclusion and exclusion chart allowed me to determine which articles and article types I would use for this study and which I would leave out.

For example, I did not use dissertations as a source for this study. I did, however, include qualitative, quantitative, and mixed methods studies. The credibility chart helped me to eliminate articles based on elements such as the research question not being answered in the text, which also helped with the list of excluded articles. The findings matrix allowed me to compare articles and compile the major themes found in the literature to provide the overall themes for this research synthesis.

I selected eleven articles for this study: Cheung, Hew, and Ng (2008); Chapman, Storberg-Walker, and Stone (2008); Chen, Chen, and Tsai (2009); Cox and Cox (2008); So (2008); Woods and Ebersole (2003); Yeh and Lahman (2007); Bliuc, Ellis, Goodyear, and Piggott (2009); Lin and Overbaugh (2007); An, Shin, and Lim (2009); and Baran and Correia (2009). Cheung et al. (2008) examined preservice teachers' course postings, logs, and other contributions to understand students' reasons for participating in certain asynchronous online forums and not participating in others. Chapman et al.'s (2008) study asked students from two graduate-level classes why they responded to certain posts in a course but did not respond to others, in order to investigate what prompts students to post or not post in asynchronous discussions. Chen et al. (2009) focused their attention on understanding how students (in this case, teachers in a professional development course) felt about using online synchronous discussions to work and socialize with each other. In order to learn more about group dynamics and collaboration in asynchronous discussions, Cox and Cox (2008) investigated the discussion board transcripts for students in three graduate classes. So (2009) examined how groups used asynchronous online discussion forums to collaborate in a setting where the discussion boards were not mandatory. Woods and Ebersole (2003) examined if discussion boards used in two online courses helped students feel more connected to each other

and to faculty. The discussion folders were not related to the course subject matter, but they were there to help course participants connect. Yeh and Lahman (2007) interviewed pre-service teachers about their perceptions of asynchronous online discussion, a tool employed in the educational technology course they were all taking. Bliuc et al. (2009) examined college students' experiences with asynchronous online discussion, in addition to face-to-face discussion, in a foreign policy course and how those experiences related to their academic outcomes.

## **Findings**

The findings suggest that the following major themes were apparent when examining various student outcomes when using online discussions and chats: relational capital (Cheung et al., 2008) influenced students' experiences in courses and their decision to post or not, students miss the social cues (facial expressions, tone of voice, etc.), interaction increased student achievement, time constraints had an affect on whether students chose to respond to discussion posts, and instructor presence influenced how students decided to post.

#### Relational Capital

This was perhaps the largest category, as almost every study from this synthesis discussed some form of relational capital and its importance to online discussions and chats. Relational capital has to do with any relationships people have with each other and how these relationships influence students' decisions to post (Cheung et al., 2008, p. 38). In the Chapman et al. (2008) study, for example, some students felt that their relational role in a discussion group was that of leader, so they assumed that position. One student, Gabby, stated, "I felt I needed to step in early to take control of the meetings and set the boundaries/guidelines for the meetings" (p. 4). Martin, another student, remarked, "I felt that I needed to respond so that we would not waste a lot of time trying to meet everyone's needs" (p. 4).

In Chen et al.'s (2009) study, in order to examine student-student interaction in synchronous online discussion for teachers in an online teacher professional development (OTPD) program, they broke the messages down into three groups based on time: 20 minutes, 20-40 minutes, 40 minutes-end of discussion. They noted that during the first and third periods, students were relating to each other on a social level. And as the discussion ended, fewer and fewer posts were related to the topic.

When asked how they felt about interacting via synchronous discussion, one student, Henry, stated that the format was good for "'sharing teaching experiences,'" but that the discussions about theory "'scare away'" many of the teachers (p. 1162). On the other hand, Joan, another student in the course, noted, "Online communications can establish connections among participating teachers. With OTPD, you can share teaching practices with teachers from outside of your school" (p. 1163).

Other relationships between students impacted their asynchronous online discussion experiences. For example, in Cox and Cox's (2008) study, they noted the following based on quantitative data:

Students engage in increased interaction between and among themselves as the semester progressed; students increasingly and directly interact with their peers by name and/or specific response to another student's posting as the semester progressed; students relate personal and/or professional experiences to their peers; and students request specific information from fellow classmates. (p. 563)

Qualitative data also showed that students were comfortable with each other in the online environment. Cox and Cox mentioned the use of elements such as encouragement and humor.

When relating to each other in groups, So (2008) found that even students with experience using asynchronous online discussion did not use the online forums to collaborate with each other.

Further exploration of qualitative data revealed one potential reason students chose not to relate to each other via the asynchronous forum. Respondent 2 stated:

After working online, we realized that we weren't online at the same time, and we couldn't answer questions quickly. When meeting face-to-face, we can engage persons' body language and reactions to what another person is saying. When there is any disagreement, you could work that out better when you are face-to-face than when you are online. (p. 151)

Some students preferred relating to each other face-to-face instead of via the asynchronous discussion board. For the theme of relational capital, the transactional distance associated with the online courses was greater for some students than for others. While some students felt a sense of community with other students in the online environment, others felt disconnected and longed for the face-to-face environment.

In the Woods and Ebersole (2003) study, there were a series of non-discussion-related folders created for students to interact with each other. Out of all of the folders, Autobiographies; Prayer Requests; Devotionals; and Cybercafe, the most used folder was the Autobiographies folder. One student noted of the Autobiographies folder, "'People know who I am...it proves I exist in cyberspace'" (p. 107). Another stated that it "'helps overcome initial apprehension/fear of

interacting with people you don't know...other folders don't seem to do that as easily..." (p. 107).

Social Cues

For Ben, a student in Yeh and Lahman's (2007) study, social cues were very important. He stated:

Tones of voices, expressions are not on the computers. One time I sent an e-mail to people. I meant it one way, but the words came out in an entirely different way to the persons who received the e-mail because my tone of voice and facial expression were not expressed in the e-mail, so....that's something that you have to be very careful. If that is a controversial topic,

be careful of that! People might misunderstand what you write. (p. 695)

Because Ben was in an asynchronous discussion environment, the immediate clarification that comes from being in a face-to-face course was lost.

However, in the online environment, social cues often change from that of facial expression and tone, which is still available in courses that use synchronous discussion tools like Wimba Live Classroom, to response cues. For example, in Cheung et al.'s (2008) study, one student stated, "I went into all forums except for one or two where the owners were not active; they didn't answer the questions posted" (p. 41). Another commented, "Some forum owners weren't prompt in their replies. This frustrated participants who were waiting for the replies to carry on with the discussion. It delayed the discussion time and put off some participants who wanted to contribute their ideas" (Cheung et al., 2008, p. 41). In this case, social cues moved from being face-to-face oriented to being response-to-response oriented. Participants adapted to the social cues available in the online environment and expected them from others in the online space. Students who missed social cues in discussion forums did not continue posting to those forums, as the aforementioned examples

show. In terms of transactional distance, discussion forum responses sometimes served as social cues that helped students to feel connected to other students in the online course.

#### Increase in Student Achievement

In Bliuc et al.'s (2009) study, students showed an increase in course achievement based on how the online discussion and chat tools were used. Students who approached both online (and also faceto-face) discussions with deep learning methods (integrating own ideas, reflecting, thinking about larger perspectives) had higher achievement than students who approached discussions with surface learning methods (posting because it is a compulsory part of the course and not reflecting on ideas and concepts).

Lin and Overbaugh's (2007) study indicated that students without a choice between chat versus threaded discussion, "descriptively" scored higher on each of the four tiers of cognitive achievement than students with a choice between the two formats (p. 409). The cognitive achievement areas were memorize-fact, comprehend-concept, apply-concept, apply-principle. The study also showed that both groups performed best on the cognitive achievement area of memorize-fact, but Lin and Overbaugh indicated that more research is needed to glean other insights about cognitive achievement with and without an option for chat or threaded discussion. Interactions Time Consuming

Although interaction may cause higher achievement in some cases, interacting with a number of students online can become time-consuming, which leads to the next theme of time constraints impacting students' participation in online discussions. In Cheung et al.'s (2008) study, for example, 87% of the students stated that they did not contribute to online posts because they did not have time to do so. Cheung et al. noted that some students stated, "'I wanted to contribute in every

forum but I found time constraint a problem for me to finish reading all the threads and posting my comments'" (p. 42). Carl, a student from Yeh and Lahman's (2007) study, also mentioned time constraints having an impact on posts. When asked if he would respond to messages posted by others, Carl stated, "Probably, as long as there are not too many people" (p. 690).

## Instructor Presence Influences Posting

An et al. (2009) discovered that instructor facilitation can determine how students participate in online discussions. For example, they noted that when an instructor required students to respond to each other, and minimized his/her social presence, students responded to each other more frequently. In one group that had more instructor presence, An et al. stated, "Interestingly, there were some postings that were specifically addressed to the instructor, rather than peers, suggesting that students might have ignored their peers as the audience" (p. 756). This instance indicates more reliance on student-instructor interaction that student-student interaction. However, in the group where there was little instructor interaction, one student noted to another, "I totally agree with you, Jason. Technology would have been a great help back in the day, as it will be in the future. There is a lot that you can do to get students excited about learning with technology and its good that you pointed that out in your post:)" (p. 756). An et al. noted that the students were more interactive with each other with less instructor presence, even referring to each other by name and mentioning each other's posts.

Similarly, Baran and Correia's (2009) study showed that student facilitation encouraged participation among other students. In an effort to decrease the focus on the instructor, students were allowed to facilitate online discussions. The study of this online graduate course showed that whether these peer-facilitation methods included highly organized facilitation or practice-oriented

facilitation in asynchronous discussion, the methods kept students engaged with the material and relying on student-student interaction instead of student-instructor interaction.

#### **Discussion**

It is not surprising that students use synchronous and asynchronous online communication tools as a way to relate to each other; after all, these tools were designed, as mentioned in the Introduction, to aid students in interacting with each other. It is also not surprising that students may miss in online communication the social cues they often have in face-to-face communication. However, it is important to note that social cues are present in the online environment, just in a different way. As mentioned in the Findings section on social cues, sometimes responses or non-responses to asynchronous discussion posts can be perceived as a type of social cue. Responses can encourage students to continue posting to the forum, while lack of response can cause students to move on to other forums. Knowing that students rely on these online social cues could affect the way students communicate with each other online. For example, if a student believes that others are waiting for him/her to respond, in order to continue the online dialogue, he/she may start to feel a greater connection to others in the course. For some, however, knowing that others are waiting for a response, and could see non-response as a sign of rudeness or lack of interest, may cause anxiety.

According to the research, interaction via online discussion tools can increase student achievement. In some instances, more reflection and thought about a particular topic/idea in the course can produce better cognitive outcomes than just surface posting, or posting only because it is a requirement. A point that should not be lost is the fact that online discussions, particularly reading through threaded discussions, can be time consuming, and students are often frustrated when they have too many posts to read, particularly when posts are long.

Perhaps the most surprising finding is that instructor presence can inhibit student-student interaction and cause students to default to the student-instructor relationship. This may seemingly conflict with other research. For example, Hara and Kling's (2000) study noted that when professors are not accessible to students, it can cause students frustration. However, the studies in this synthesis did not say that the instructor must be inaccessible, but emphasized that the role of the professor as "purveyor of all knowledge" was diminished. This does not mean that the professor was not available for questions or to provide feedback, just that students were encouraged to co-construct knowledge through interacting with each other instead of participating in "top down" knowledge construction (knowledge can only move from the professor to the students).

When examining each theme in terms of transactional distance, discussion boards are shown as both effective and ineffective. For example, some students felt connected with other students when they communicated via the discussion board. However, other students thought that discussions moved too quickly and felt disconnected from other students in the online class. On the other hand, the disconnect students felt could have less to do with the discussion board itself and more to do with how the discussion board was used. Just as student participation on discussion boards can influence students' sense of community and closeness, instructional uses of discussion boards also influence the closeness or distance students experience in online courses.

More research should be done on this topic because if professors are going to continue to use online chats and discussions in the classroom, it is imperative that they be armed with knowledge about the use of these tools at their potential affect on students in online, hybrid, and face-to-face

courses. Further examination of this topic could potentially lead to greater student satisfaction and achievement when online discussion and chats are used in postsecondary courses.

#### Conclusion

This study provides some insight into the themes that appear in literature on discussion boards and chats in online, hybrid, and face-to-face courses. It is important to examine these themes because as distance learning, web-based, and web-enhanced courses grow, it is likely that interactive components in these courses will grow as well. Synchronous and asynchronous communications are a large part of interaction in completely online and blended/hybrid courses. Knowing what works and what doesn't when it comes to the use of online discussion and chat can help to improve the outcomes of students in these courses.

# References

- An, H., Shin, S, & Lim, K. (2009). The effects of different instructor facilitation approaches on students' interactions during asynchronous online discussions.

  \*Computers & Education, 53, 749-760.
- Baglione, S., & Nastanski, M. (2007). The superiority of online discussions: Faculty perceptions. *The Quarterly Review of Distance Education, 8*(2), 139-150.
- Baran, E., & Correia, A. (2009). Student-led facilitation strategies in online discussions.

  Distance Education, 30(3), 339-361.
- Bliuc, A., Ellis, R., Goodyear, P., & Piggott, L. (2009). Learning through face-to-face and online discussions: Associations between students' conceptions, approaches and academic performance in political science. *British Journal of Educational Technology*, 41(3), 512-524.
- Chapman, D., Storberg-Walker, J., & Stone, S. (2008). Hitting reply: A qualitative study to understand student decisions to respond to online discussion postings. *E-Learning*, 5(1), 29-39.
- Chen, Y., Chen, N., & Tsai, C. (2009). The use of online synchronous discussion for web-based professional development for teachers. *Computers & Education*, 53, 1155-1166.
- Cheung, W., Hew, K., & Ng, C. (2008). Toward an understanding of why students contribute in asynchronous online discussions. *Journal of Educational Computing Research*, *38*(1), 29-50.
- Corbin, J., & Strauss, A. (2008). *Basics of qualitative research 3e*. Sage Publications: Thousand Oaks, CA.

- Cox, B., & Cox, B. (2008). Developing interpersonal and group dynamics through asynchronous threaded discussions: The use of discussion board in collaborative learning. *Education*, *128*(4), 553-565.

  Dengler, M. (2008). Classroom active learning complemented by an online discussion forum to teach sustainability. *Journal of Geography in Higher Education*, *32*(3), 481-494.
- De Wever, B., Van Keer, H., & Valcke, M. (2009). Structuring asynchronous discussion groups: The impact of role assignment and self-assessment on students' levels of knowledge construction through social negotiation. *Journal of Computer Assisted Learning*, 25, 177-188.
- Elicker, J., O'Malley, A., & Williams, C. (2008). Does an interactive WebCT site help students learn. *Teaching of Psychology*, 35, 126-131.
- Hara, N., & King, R. (2000). Student distress in a web-based distance education course. *Information, Communication & Society, 3*(4), 557-579.
- Lin, S., & Overbaugh, R. (2007). The effect of student choice of online discussion format on tiered achievement and student satisfaction. Journal of Research on *Technology in Education, 39*(4), 399-415.
- Major, C., & Savin-Baden, M. (2010). An introduction to qualitative research synthesis:

  Managing the information explosion in social science research. New York, NY:

  Routledge.
- Mitchem, K., Fitzgerald, G., Hollingshead, C., Koury, K., Miller, K., & Tsai, H. (2008).

  Enhancing case-based learning in teacher education through online discussions:

  Structure and facilitation. *Journal of Interactive Learning Research*, 19(2), 331-349.

- Moore, M. G. (2007). The theory of transactional distance. In M.G. Moore (Ed.),

  Handbook of Distance Education (2nd Edition) (pp.89-105). Mahwah, NJ:

  Lawrence Earlbaum Associates.
- Pena-Shaff, J., Altman, W., & Stephenson, H. (2005). Asynchronous online discussions as a tool for learning: Students' attitudes, expectations, and perceptions. *Journal of Interactive Learning Research*, *16*(4), 409-430.
- So, H. (2008). When groups decide to use asynchronous online discussions:

  Collaborative learning and social presence under a voluntary participation structure. *Journal of Computer Assisted Learning*, 25, 143-160.
- Woods, R., & Ebersole, S. (2003). Using non-subject-matter-specific discussion boards to build connectedness in online learning. *The American Journal of Distance Education*, 17(2), 99-118.
- Yeh, H., & Lahman, M. (2007). Pre-service teachers' perceptions of asynchronous online discussion on Blackboard. *The Qualitative Report, 12*(4), 680-704.